

## CLAIM AMENDMENTS

Claims 1 to 87 (cancelled)

1           88. (Original) A three-dimensional optical memory  
2 comprising fluorescent photosensitive glass, wherein said glass  
3 comprises at least one of two or more rare earths selected from the  
4 group consisting of ytterbium (Yb), samarium (Sm), and combinations  
5 thereof; and at least one of two or more rare earths selected from  
6 a group consisting of erbium (Er), holmium (Ho), samarium (Sm),  
7 dysprosium (Dy), Terbium (Tb), neodymium (Nd) and combinations  
8 thereof.

1           89. (Original) A three-dimensional optical memory of  
2 fluorescent photosensitive glass according to claim 88 wherein said  
3 glass further comprises about 10 mole percent to about 80 mole  
4 percent  $\text{SiO}_2$ , up to about 54 mole percent  $\text{K}_2\text{O}$ , up to about 58 mole  
5 percent  $\text{Na}_2$ , up to about 35 mole percent  $\text{Li}_2\text{O}$ , up to about 40 mole  
6 percent  $\text{BaO}$ , up to about 40 mole percent  $\text{SrO}$ , up to about 56 mole  
7 percent  $\text{CaO}$ , up to about 42 mole percent  $\text{MgO}$ , up to about 48 mole  
8 percent  $\text{ZnO}$  and up to about 5 mole percent of said two or more rare  
9 earths in oxide form.

1           90. (Original) A three-dimensional optical memory of  
2   fluorescent photosensitive glass according to claim 88 wherein said  
3   glass further comprises about 20 mole percent to about 80 mole  
4   percent  $P_2O_5$ , up to about 47 mole percent  $K_2O$ , up to about 60 mole  
5   percent  $Na_2O$ , up to about 60 mole percent  $Li_2O$ , up to about 58 mole  
6   percent  $BaO$ , up to about 56 mole percent  $SrO$ , up to about 56 mole  
7   percent  $CaO$ , up to about 60 mole percent  $MgO$ , up to about 64 mole  
8   percent  $ZnO$ , up to about 5 mole percent yttrium (Y) ytterbium, and  
9   up to about 5 mole percent of said two or more rare earths in oxide  
10  form.

1           91. (Original) A three-dimensional optical memory  
2   comprising fluorescent photosensitive vitroceraamic, wherein said  
3   vitroceraamic comprises one or more photosensitizing metals and one  
4   or more rare earths, one or more photosensitizing metals is se-  
5   lected from the group consisting of gold (Au), copper (Cu) and  
6   combinations thereof; and one or more rare earths is selected from  
7   the group consisting praseodymium (Pr), dysprosium (Dy), erbium  
8   (Er), holmium (Ho), europium (Eu), thulium (Tm) and combinations  
9   thereof.

1           92. (Original) The three-dimensional optical memory of  
2 fluorescent photosensitive vitroceramic according to claim 91  
3 wherein said vitroceramic further comprises, in mole percent, about  
4 10% to about 60% SiO<sub>2</sub>, about 5% to about 60% PbF<sub>2</sub>, about 0.05% to  
5 about 0.3% Sb<sub>2</sub>O<sub>3</sub>, up to about 0.5% CeO<sub>2</sub>, up to about 60% CdF<sub>2</sub>, up to  
6 about 30% GeO<sub>2</sub>, up to about 10% TiO<sub>2</sub>, up to about 10% ZrO<sub>2</sub>, up to  
7 about 40% Al<sub>2</sub>O<sub>3</sub>, up to about 40% Ga<sub>2</sub>O<sub>3</sub>, and about 10% to about 30%  
8 LnF<sub>3</sub> where Ln1 is selected from the group consisting of yttrium  
9 (Y) and ytterbium (Yb).

1           93. (Original) The three-dimensional optical memory of  
2 fluorescent photosensitive vitroceramic according to claim 92  
3 wherein said Ln1 comprises ytterbium (Yb) and said Ln2 is selected  
4 from the group consisting of Er, Ho, Tm and combinations thereof;  
5 whereby said vitroceramic is capable of converting incident infra-  
6 red radiation into visible light.

1           94. (Original) The three-dimensional optical memory of  
2 fluorescent photosensitive vitroceramic according to claim 93  
3 wherein said Ln1 comprises yttrium (Y) and said Ln2 is selected  
4 from the group consisting of Pr, Dy, Ho, Er, Eu, Tm and combina-  
5 tions thereof; whereby said vitroceramic is capable of converting  
6 incident ultraviolet light into visible light.

1           95. (New) A data storage and retrieval system for  
2 storing information on, and retrieving information from, a three-  
3 dimensional fluorescent photosensitive optical memory, said system  
4 comprising:

5           (a) a first coherent light beam generator in the form of  
6 a first Ti:sapphire laser for generating a first coherent light  
7 beam;

8           (b) a second coherent light beam generator in the form of  
9 a second Ti:sapphire laser for generating a second coherent light  
10 beam; and

11           c) an optical positioning system for directing said first  
12 coherent light beam and said second coherent light beam to irradi-  
13 ate an individually selected volume of said optical memory to  
14 produce a change in fluorescence characteristics in said selected  
15 volume.

1           96. (New) A data storage and retrieval system for  
2 storing information on, and retrieving information from, a three-  
3 dimensional fluorescent photosensitive optical memory, said system  
4 comprising:

5           (a) a first coherent light beam generator for generating  
6 a first coherent light beam;

7           (b) a second coherent light beam generator for generating  
8 a second coherent light beam; and

9           c) an optical positioning system for directing said first  
10 coherent light beam and said second coherent light beam to irradi-  
11 ate an individually selected volume of said optical memory to  
12 produce a change in fluorescence characteristics in said selected  
13 volume; and

14           (d) an optical focusing system comprising a confocal  
15 microscope for focusing said first coherent light beam and said  
16 second coherent light beam on said optical memory.

1           97. (New) A data storage and retrieval system for  
2 storing information on, and retrieving information from, a  
3 three-dimensional fluorescent photosensitive optical memory, said  
4 system comprising:

5           (a) a coherent light beam generator for generating a  
6 coherent light beam; and

7           (b) an optical positioning system for directing said  
8 coherent light beam to irradiate an individually selected volume of

9 said optical memory to produce a change in fluorescence character-  
10 istics in said selected volume.

1 98. (New) The data storage and retrieval system  
2 according to claim 97 wherein said coherent light beam generator  
3 irradiates said individually selected volume of said optical memory  
4 with said coherent light beam at a predetermined writing wavelength  
5 to cause a change in fluorescence characteristics in said selected  
6 volume.

1 99. (New) The data storage and retrieval system accord-  
2 ing to claim 97 further comprising an optical focusing system for  
3 focusing said coherent light beam on said optical memory.

1 100. (New) The data storage and retrieval system  
2 according to claim 99 wherein said optical focusing system com-  
3 prises a confocal microscope.

1 101. (New) The data storage and retrieval system  
2 according to claim 97 wherein said optical positioning system  
3 further comprises a vertical scanning system to position said  
4 coherent light beam along a vertical axis of said optical memory.

1           102. (New) The data storage and retrieval system  
2 according to claim 97 wherein said optical positioning system  
3 further comprises a radial scanning system to position said coher-  
4 ent light beam along a radial axis of said optical memory.

1           103. (New) The data storage and retrieval system  
2 according to claim 97 wherein said optical positioning system  
3 further comprises a motor to rotate said optical memory.

1           104. (New) The data storage and retrieval system  
2 according to claim 97 wherein said coherent light beam generator is  
3 a laser.

1           105. (New) The data storage and retrieval system  
2 according to claim 104 wherein said laser is a Ti: sapphire laser.

1           106. (New) The data storage and retrieval system  
2 according to claim 104 wherein said laser is a pulse laser.

1           107. (New) The data storage and retrieval system  
2 according to claim 97 further comprising a reading system for  
3 reading information from said optical memory, said reading system  
4 comprising:

5 (a) a reading light beam generator for generating a  
6 reading light beam to excite at least an individually selected  
7 volume of said optical memory with said reading light beam at a  
8 predetermined reading wavelength; and

9 (b) a detector for detecting fluorescence in at least  
10 said individually selected volume.

1 108. (New) The data storage and retrieval system  
2 according to claim 107 wherein said reading light beam generator  
3 excites a volumetric slice of said optical memory with said reading  
4 light beam, said volumetric slice including multiple individual  
5 volumes.

1 109. (New) The data storage and retrieval system  
2 according to claim 107 wherein said reading light beam generator is  
3 a coherent light beam generator.

1 110. (New) The data storage and retrieval system  
2 according to claim 109 wherein said coherent light beam generator  
3 is a laser.

1 111. (New) The data storage and retrieval system  
2 according to claim 109 wherein said laser is a  
3 Ti: sapphire laser.



1           112. (New) The data storage and retrieval system  
2 according to claim 109 wherein said laser is a pulse laser.

1           113. The data storage and retrieval system according to  
2 claim 107 further comprising an optical focusing system for focus-  
3 ing said coherent reading light beam on at least individually  
4 selected volume of said optical memory.

1           114. The data storage and retrieval system according to  
2 claim 113 wherein said optical focusing system comprises a confocal  
3 microscope.

1           115. The data storage and retrieval system according to  
2 claim 107 further comprising a vertical scanning system to position  
3 said reading light beam along a vertical axis of said optical  
4 memory.

1           116. The data storage and retrieval system according to  
2 claim 107 further comprising a radial scanning system to position  
3 said reading light beam along a radial axis of said optical memory.

1           117. The data storage and retrieval system according to  
2 claim 107 further comprising a radial scanning system to position  
3 said detector along a radial axis of said optical memory.

1           118. The data storage and retrieval system according to  
2 claim 107 further comprising a motor to rotate said optical memory.

1           119. The data storage and retrieval system according to  
2 claim 97 wherein said fluorescent photosensitive optical memory  
3 comprises glass, said glass comprises two or more rare  
4 earths, at least one of said two or more rare earths is selected  
5 from the group consisting of europium (Eu), ytterbium (Yb),  
6 samarium (Sm), and combinations thereof; and at least one of said  
7 two or more rare earths is selected from a group consisting of  
8 erbium (Er), thulium (Tm), ytterbium (Yb), holmium (Ho), samarium  
9 (Sm), dysprosium (Dy), terbium (Tb), neodymium (Nd) and combina-  
10 tions thereof.

1           120. (New) The data storage and retrieval system  
2 according to claim 119 wherein said glass further comprises about  
3 10 mole percent to about 80 mole percent  $\text{SiO}_2$ , up to about 54 mole  
4 percent  $\text{K}_2\text{O}$ , up to about 58 mole percent  $\text{Na}_2\text{O}$ , up to about 35 mole  
5 percent  $\text{Li}_2\text{O}$ , up to about 40 mole percent  $\text{BaO}$ , up to about 40 mole  
6 percent  $\text{SrO}$ , up to about 56 mole percent  $\text{CaO}$ , up to about 42 mole  
7 percent  $\text{MgO}$ , up to about 48 mole percent  $\text{ZnO}$  and up to about 5 mole  
8 percent of said two or more rare earths in oxide form.

1           121. (New) The data storage and retrieval system  
2 according to claim 119 wherein said glass further comprises about  
3 20 mole percent to about 80 mole percent  $P_2O_3$ , up to about 47 mole  
4 percent  $K_2O$ , up to about 60 mole percent  $Na_2O$ , up to about 60 mole  
5 percent  $Li_2O$ , up to about 58 mole percent  $BaO$ , up to about 56 mole  
6 percent  $SrO$ , up to about 56 mole percent  $CaO$ , up to about 60 mole  
7 percent  $MgO$ , up to about 64 mole percent  $ZnO$ , up to about 5 mole  
8 percent yttrium (Y), and up to about 5 mole percent of said two or  
9 more rare earths in oxide form.

1           122. (New) The data storage and retrieval system  
2 according to claim 97 wherein said fluorescent photosensitive  
3 memory comprises vitroc ceramic, said vitroc ceramic comprises one or  
4 more photosensitizing metals selected from the group consisting of  
5 silver (Ag), gold (Au), copper (Cu) and combinations thereof; and  
6 one or more rare earths selected from the group consisting of  
7 praseodymium (Pr), dysprosium (Dy), erbium (Er), holmium (Ho),  
8 europium (Eu), thulium (Tm) and combinations thereof.

1           123. (New) The data storage and retrieval system  
2 according to claim 122, wherein said vitroc ceramic further com-  
3 prises, in mole percent, about 10% to about 60%  $SiO_2$ , about 5% to  
4 about 60%  $PbF_2$ , about 0.05% to about 0.3%  $Sb_2O_3$ , up to about 0.5%  
5  $CeO_2$ , up to about 60%  $CdF_2$ , up to about 30%  $GeO_2$ , up to about 10%

6      $\text{TiO}_2$ , up to about 10%  $\text{ZrO}_2$ , up to about 40%  $\text{Al}_2\text{O}_3$ , up to about 40%  
7      $\text{Ga}_2\text{O}_3$ , and about 10% to about 30%  $\text{LnF}_3$  where Ln1 is selected from  
8     the group consisting of yttrium (Y) and ytterbium (Yb).

1             124. (New) The data storage and retrieval system accord-  
2     ing to claim 123, wherein said Ln1 comprises ytterbium (Yb) and  
3     said Ln2 is selected from the group consisting of Er, Ho, Tm and  
4     combinations thereof; whereby said vitroc ceramic is capable of  
5     converting incident infrared radiation into visible light.

1             125. (New) The data storage and retrieval system  
2     according to claim 124, wherein said Ln1 comprises yttrium (Y) and  
3     said Ln2 is selected from the group consisting of Pr, Dy, Ho, Er,  
4     Eu, Tm and combinations thereof; whereby said vitroc ceramic is  
5     capable of converting incident ultraviolet light into visible  
6     light.

1             126. (New) A data retrieval system for reading informa-  
2     tion from a three-dimensional fluorescent photosensitive optical  
3     memory, said retrieval system comprising:

4             (a) a reading light beam generator for generating a  
5     reading light beam to excite at least an individually selected  
6     volume of said optical memory with said reading light beam at a  
7     predetermined reading wavelength; and

8                   (b) a detector for detecting fluorescence in at least  
9   said individually selected volume.

1                   127. (New)   The data retrieval system according to  
2   claim 126 wherein said reading light beam generator is a coherent  
3   light beam generator.

1                   128. (New)   The data retrieval system according to  
2   claim 127 wherein said coherent light beam generator is a laser.

1                   129. (New)   The data retrieval system according to claim  
2   128 wherein said laser is a Ti: sapphire laser.

1                   130. (New)   The data retrieval system according to  
2   claim 128 wherein said laser is a pulse laser.

1                   131. (New)   The data retrieval system according to claim  
2   129 further comprising an optical focusing system for focusing said  
3   reading light beam on said individually selected volume of said  
4   optical memory.

1           132. (New) The data retrieval system according to claim  
2   131 wherein said optical focusing system comprises a confocal  
3   microscope.

1           133. (New) The data retrieval system according to claim  
2   126 further comprising a vertical scanning system to position said  
3   reading light beam along a vertical axis of said optical memory.

1           134. (New) The data retrieval system according to claim  
2   126, further comprising a radial scanning system to position said  
3   reading light beam along a radial axis of said optical memory.

1           135. (New) The data retrieval system according to claim  
2   126 wherein said fluorescent photosensitive memory comprises glass,  
3   said glass comprises two or more rare earths, at least one of said  
4   two or more rare earths is selected from the group consisting of  
5   europium (Eu), ytterbium (Yb), samarium (Sm), and combinations  
6   thereof; and at least one of said two or more rare earths is  
7   selected from a group consisting of erbium (Er), thulium (Tm),  
8   ytterbium (Yb), holmium (Ho), samarium (Sm), dysprosium (Dy),  
9   terbium (Tb), neodymium (Nd) and combinations thereof.

1           136. (New) The data retrieval system according to claim  
2 135 wherein said glass further comprises about 10 mole percent to  
3 about 80 mole percent  $\text{SiO}_2$ , up to about 54 mole percent  $\text{K}_2\text{O}$ , up to  
4 about 58 mole percent  $\text{Na}_2\text{O}$ , up to about 35 mole percent  $\text{Li}_2\text{O}$ , up to  
5 about 40 mole percent  $\text{BaO}$ , up to about 40 mole percent  $\text{SrO}$ , up to  
6 about 56 mole percent  $\text{CaO}$ , up to about 42 mole percent  $\text{MgO}$ , up to  
7 about 48 mole percent  $\text{ZnO}$  and up to about 5 mole percent of said  
8 two or more rare earths in oxide form.

1           137. (New) The data retrieval system according to claim  
2 135, wherein said glass further comprises about 20 mole percent to  
3 about 80 mole percent 45 up to about 47 mole percent  $\text{K}_2\text{O}$ , up to  
4 about 60 mole percent  $\text{Na}_2\text{O}$ , up to about 60 mole percent  $\text{Li}_2\text{O}$ , up to  
5 about 58 mole percent  $\text{BaO}$ , up to about 56 mole percent  $\text{SrO}$ , up to  
6 about 56 mole percent  $\text{CaO}$ , up to about 60 mole percent  $\text{MgO}$ , up to  
7 about 64 mole percent  $\text{ZnO}$ , up to about 5 mole percent yttrium (Y),  
8 and up to about 5 mole percent of said two or more rare earths in  
9 oxide form.

1           138. The data retrieval system according to claim 126,  
2 wherein said fluorescent photosensitive memory comprises vitro-  
3 ceramic, said vitroc ceramic comprises one or more  
4 photosensitizing metals selected from the group consisting of  
5 silver (Ag), gold (Au), copper (Cu) and combinations thereof ; and  
6 one or more rare earths selected from the group consisting of  
7 praseodymium (Pr), dysprosium (Dy), erbium (Er), holmium (Ho),  
8 europium (Eu), thulium (Tm) and combinations thereof.

1           139. (New) The data retrieval system according to  
2 claim 138, wherein said vitroc ceramic further comprises, in mole  
3 percent, about 10% to about 60%  $\text{SiO}_2$ , about 5% to about 60%  $\text{PbF}_2$ ,  
4 about 0.05% to about 0.3%  $\text{Sb}_2\text{O}_3$ , up to about 0.5%  $\text{CeO}_2$ , up to about  
5 60%  $\text{CdF}_2$ , up to about 30%  $\text{GeO}_2$ , up to about 10%  $\text{TiO}_2$ , up to about  
6 10%  $\text{ZrO}_2$ , up to about 40%  $\text{Al}_2\text{O}_3$ , up to about 40%  $\text{Ga}_2\text{O}_3$ , and about 10%  
7 to about 30%  $\text{LnF}_3$  where Ln1 is selected from the group consisting  
8 of yttrium (Y) and ytterbium (Yb).

1           140. (New) The data retrieval system according to  
2 claim 139, wherein said Ln1 comprises ytterbium (Yb) and said Ln2  
3 is selected from the group consisting of Er, Ho, Tm and combina-  
4 tions thereof, whereby said vitroc ceramic is capable of converting  
5 incident infrared radiation into visible light.



1           141   (New)   The data retrieval system according to claim  
2   139, wherein said Ln1 comprises yttrium (Y) and said Ln2 is se-  
3   lected from the group consisting of Pr, Dy, Ho, Er, Eu, Tm and  
4   combinations thereof; whereby said vitroc ceramic is capable of  
5   converting incident ultraviolet light into visible light.

1           142.   (New)   A method for retrieving data from a fluo-  
2   rescent photosensitive three-dimensional optical memory, said  
3   method comprising:

4           (a) generating a reading light beam;

5           (b) exciting at least an individually selected volume of  
6   said optical memory with said reading light beam at a predetermined  
7   reading wavelength; and

8           c) detecting fluorescence in at least said individually  
9   selected volume.

1           143.   (New)   The method for retrieving data according to  
2   claim 142 further comprising generating said reading light beam  
3   from a coherent light beam generator.

1           144.   (New)   The method for retrieving data according to  
2   claim 142 comprising generating said reading light beam from a  
3   laser.

1           145. (New) The method for retrieving data according to  
2 claim 144 comprising generating said reading light beam from a Ti:  
3 sapphire laser.

1           146. (New) The method for retrieving data according to  
2 claim 144 comprising generating said reading light beam from a  
3 pulse laser.

1           147. (New) The method for retrieving data according to  
2 claim 142 comprising detecting fluorescence in at least said  
3 individually selected volume using a detector.

1           148. (New) The method for retrieving data according to  
2 claim 142 further comprising focusing said reading light beam on  
3 said optical memory.

4           149. (New) The method for retrieving data according to  
5 claim 148 wherein said focusing further comprises using a confocal  
6 microscope.

1           150. (New) The method for retrieving data according to  
2 claim 142 further comprising position said reading light beam along  
3 a vertical axis of said optical memory using a vertical scanning  
4 system.

5           151. (New) The method for retrieving data according to  
6 claims 142 further comprising positioning said reading light beam  
7 along a radial axis of said optical memory using a radial scanning  
8 system.

1           152. (New) The method for retrieving data according to  
2 claim 142, comprising providing a fluorescent photosensitive  
3 memory comprising glass, said glass comprising using two or more  
4 rare earths, selecting at least one of said two or more rare earths  
5 from the group consisting of europium (Eu), ytterbium (Yb), samar-  
6 ium (Sm), and combinations thereof, and selecting at least one of  
7 said two or more rare earths from a group consisting of erbium  
8 (Er), thulium (Tm) ytterbium (Yb), holmium (Ho), samarium (Sm),  
9 dysprosium (Dy), terbium (Tb), neodymium (Nd) and combinations  
10 thereof.

1           153. (New) The method for retrieving data according to  
2 claim 152, comprising using glass further comprising about 10 mole  
3 percent to about 80 mole percent  $\text{SiO}_2$ , up to about 54 mole percent  
4  $\text{K}_2\text{O}$ , up to about 58 mole percent  $\text{Na}_2\text{O}$ , up to about 35 mole percent  
5  $\text{Li}_2\text{O}$ , up to about 40 mole percent  $\text{BaO}$ , up to about 40 mole percent  
6  $\text{SrO}$ , up to about 56 mole percent  $\text{CaO}$ , up to about 42 mole percent  
7  $\text{MgO}$ , up to about 48 mole percent  $\text{ZnO}$  and up to about 5 mole percent  
8 of said two or more rare earths in oxide form.

1           154. (New) The method for retrieving data according to  
2 claim 152 comprising using glass further comprising about 20 mole  
3 percent to about 80 mole percent  $\text{P}_2\text{O}_5$ , up to about 47 mole percent  
4  $\text{K}_2\text{O}$ , up to about 60 mole percent  $\text{Na}_2\text{O}$ , up to about 60 mole percent  
5  $\text{Li}_2\text{O}$ , up to about 58 mole percent  $\text{BaO}$ , up to about 56 mole percent  
6  $\text{SrO}$ , up to about 56 mole percent  $\text{CaO}$ , up to about 60 mole percent  
7  $\text{MgO}$ , up to about 64 mole percent  $\text{ZnO}$ , up to about 5 mole percent  
8 yttrium (Y), and up to about 5 mole percent of said two or more  
9 rare earths in oxide form.

1           155. (New) The method for retrieving data according to  
2 claim 142, providing a fluorescent photosensitive memory comprising  
3 vitroc ceramic, said vitroc ceramic comprising using one or more  
4 photosensitizing metals and one or more rare earths, selecting one  
5 or more said photosensitizing metals from the group consisting of

6 silver (Ag), gold (Au), copper (Cu) and combinations thereof; and  
7 selecting one or more said rare earths from the group consisting of  
8 praseodymium (Pr), dysprosium (Dy), erbium (Er), holmium (Ho),  
9 europium (Eu), thulium (Tm) and combinations thereof.

1 156. (New) The method for retrieving data according to  
2 claim 155, comprising using said vitroceramic further comprising,  
3 in mole percent, about 10% to about 60%  $\text{SiO}_2$ , about 5% to about 60%  
4  $\text{PbF}_2$ , about 0.05% to about 0.3%  $\text{Sb}_2\text{O}_3$ , up to about 0.5%  $\text{CeO}_2$ , up to  
5 about 60%  $\text{CdF}_2$ , up to about 30%  $\text{GeO}_2$ , up to about 10%  $\text{TiO}_2$ , up to  
6 about 10%  $\text{ZrO}_2$ , up to about 40%  $\text{Al}_2\text{O}_3$ , up to about 40%  $\text{Ga}_2\text{O}_3$ , and  
7 about 10% to about 30%  $\text{LnIF}_3$  where Ln1 is selected from the group  
8 consisting of yttrium (Y) and ytterbium (Yb).

1 157. (New) The method for retrieving data according to  
2 claim 156, comprising using vitroceramic wherein said Ln1 comprises  
3 ytterbium (Yb) and said Ln2 is selected from the group consisting  
4 of Er, Ho, Tm and combinations thereof, whereby said vitroceramic  
5 is capable of converting incident infrared radiation into visible  
6 light.

1           158. The method for retrieving data according to claim  
2   152, comprising using vitroceramic wherein said Ln1 comprises  
3   yttrium (Y) and said Ln2 is selected from the group consisting of  
4   Pr, Dy, Ho, Er, Eu, Tm and combinations thereof; whereby said  
5   vitroceramic is capable of converting incident ultraviolet light  
6   into visible light.